Ebola virus disease preparedness strengthening team

Senegal country visit

17–21 November 2014

World Health Organization

 WHO/EVD/PCV/Senegal/15

Contents

EXECUTIVE SUMMARY	**3**
INTRODUCTION	**6**
BACKGROUND	**6**
ACTIONS TAKEN BY SENEGAL	**7**
OBJECTIVES OF THE COUNTRY VISIT	**7**
TEAM MEMBERS	**8**
TEAM ACTIVITIES: DAY-BY-DAY SUMMARY	**8**
FINDINGS	**12**
HUMANITARIAN COUNTRY TEAM OVERVIEW	**14**
RESULTS OF THE TABLE-TOP EXERCISE	**15**
PRIORITY ACTIVITIES	**16**
CONCLUSIONS AND NEXT STEPS	**19**
ANNEX 1. TEAM COMPOSITION	**20**
ANNEX 2. PRELIMINARY RESULTS FOR THE CHECKLIST	**21**
ANNEX 3. ADDITIONAL OBSERVATIONS ON FIELD VISITS	**27**

Executive summary

As recently demonstrated in Mali, Nigeria and Senegal, the evolving outbreak of Ebola virus disease (EVD) in West Africa poses a considerable risk to countries in close geographical proximity to those with intense, widespread transmission. If there is an adequate level of preparation, introduction of the virus can be contained before a large outbreak develops. WHO, with partners including the United States Centers for Disease Control and Prevention (CDC), is deploying international "preparedness strengthening teams" to help unaffected countries build on their current preparedness and planning.

In August 2014, the WHO Director-General declared the EVD outbreak a public health emergency of international concern under the International Health Regulations (2005) (IHR). The IHR Emergency Committee recommended that unaffected states with land borders adjoining states in which there was Ebola transmission should urgently establish surveillance for clusters of unexplained fever or deaths due to febrile illness; establish access to a qualified diagnostic laboratory for EVD; ensure that basic infection prevention and control measures are in place in health care facilities and that health workers are aware of and trained in the appropriate procedures; and establish rapid response teams with the capacity to investigate and manage EVD cases and their contacts.

EVD preparedness is also supported by the United Nations Mission for Emergency Ebola Response, the five strategic pillars of which are to: stop the outbreak, treat infected patients, ensure essential services, preserve stability and prevent further outbreaks. A consultation between WHO and partners on EVD preparedness and readiness, held in Brazzaville on 8–10 October 2014, agreed on intensified, harmonized, coordinated support to currently unaffected countries. WHO is intensifying preparedness to ensure immediate outbreak response capacity in Benin, Burkina Faso, Cameroon, the Central African Republic, Cote d'Ivoire, the Democratic Republic of the Congo, Gambia, Ghana, Guinea Bissau, Mali, Mauritania, Nigeria, Senegal and Togo.

The immediate objective of the country visit to Senegal was to build upon the public health preparedness already in place and to ensure that systems are available to investigate and report potential EVD cases and to mount an effective response to prevent a larger outbreak. The joint team for strengthening preparedness for EVD was composed of representatives of Senegal's Ministry of Health, WHO, CDC, the United Nations Office for Coordination of Humanitarian Affairs, the European Centre for Disease Prevention and Control, the Erasmus Medical Centre, Netherlands, and John Hopkins University, USA.

After technical working group meetings, field visits and a "table-top" simulation exercise were undertaken. Strengths and weaknesses were identified, and specific areas for improvement were proposed to the Ministry of Health to be completed within 30, 60 and 90 days. These are listed in the EVD preparedness plan for Senegal.

Component 1: Coordination

- Clarify the roles and responsibilities of the Emergency Operations Centre (EOC) and other coordinating bodies, specifically the National Epidemic Management Committee, the Crisis Committee, the departments and services of the Ministry of Health and Social Welfare and the other levels of the health pyramid (regions and districts).

- Operationalize the EOC.
- Expedite implementation of a logistics plan.

Component 2: Rapid response team

- Establish rapid response teams at central and regional levels with an official instrument.
- Strengthen the capacity of the teams by training and with logistics and financial resources.

Component 3: Social mobilization

- Finalize the national communication strategy and adapt it to regional and district levels, including all media (private, community), and prepare various scenarios for spread of the epidemic (see Annex 2).
- Enhance the capacity of the hotline in terms of equipment and human resources, and analyse calls to identify rumours and ensure communication among regions, the Regional Office for Education and Information on Public Health and the National Service for Health Education and Information.

Component 4: Infection prevention and control

- Provide personal protective equipment (PPE) suitable for use at all EVD transit and treatment centres.
- Consolidate and validate the composition of EVD hygiene kits, and supply them to all transit and treatment centres.
- Strengthen the capacity of burial teams, including conducting at least one simulation exercise per region.

Component 5: Case management

- Standardize the training of medical and non-medical personnel at transit and treatment centres throughout Senegal.
- Operationalize the EVD treatment centres in St Louis, Tambacounda, Kaolack, Kolda and Ziguinchor.

Component 6: Epidemiological surveillance

- Sensitize the population to use the dedicated hotline to alert the health authorities to suspected cases.
- Strengthen the alert management capacity of the National Service for Health Education and Information call centre (human resources, training, equipment, procedures, call analysis, database).
- Train and supervise health workers with regard to directives, resources, case reporting, case identification and tracing of contacts.

Component 7: Contact tracing

- Train trainers in use of the contact-tracing module, including interpersonal communication and EVD awareness-raising.
- Train community workers in contact tracing, including interpersonal communication and EVD awareness-raising.

Component 8: Laboratory

- Make arrangements for rapid transport of specimens from the remotest regions.

Component 9: Capacity at points of entry

- Adapt the IHR plan of action at designated points of entry and seek the necessary funding, equipment and human resources for its implementation.

Component 10: Budget

- Advocate for the renewal of emergency funds if necessary.

Introduction

Given the evolving situation of EVD, there is considerable risk that cases will appear in currently unaffected countries. With adequate preparation, introduction of the virus can be contained before a large outbreak develops. WHO is currently deploying international "preparedness strengthening teams" to help unaffected countries strengthen or plan preparedness. The teams are formed with national and international partners and networks such as the Global Outbreak Alert and Response Network, the International Association of National Public Health Institutes and the United States Centers for Disease Control and Prevention (CDC). The teams visit countries to support them in developing operational readiness for EVD to the greatest degree possible.

In August 2014, the WHO Director-General declared the EVD outbreak a public health emergency of international concern under the International Health Regulations (2005) (IHR). The IHR Emergency Committee recommended that unaffected states with land borders adjoining states with Ebola transmission urgently establish surveillance for clusters of unexplained fever or deaths due to febrile illness; establish access to a qualified diagnostic laboratory for EVD; ensure that basic infection prevention and control measures are in place in health care facilities and that health workers are aware of and trained in appropriate procedures; and establish rapid response teams with the capacity to investigate and manage EVD cases and their contacts.

In particular, the IHR Emergency Committee recommended that countries:

- establish alert systems at:
  - major land border crossings with already affected countries (which are currently Guinea, Liberia, Nigeria and Sierra Leone) and
  - the airport, seaport (if any) and health care facilities, especially major hospitals, in the capital city;
- activate their epidemic management committee and rapid response teams;
- ensure that adequate infrastructure and supplies for infection prevention and control are available in health care facilities;
- ensure that health care workers have received training in the application of standard precautions and appropriate use of personal protective equipment (PPE); and
- consider activating public health emergency contingency plans at designated points of entry.

EVD preparedness is also supported by the United Nations Mission for Emergency Ebola Response, which has five strategic aims: to stop the outbreak, treat infected patients, ensure essential services, preserve stability and prevent further outbreaks. A consultation between WHO and partners on EVD preparedness and readiness, held in Brazzaville on 8–10 October 2014, agreed on intensified, harmonized, coordinated action to support currently unaffected countries. WHO is accelerating preparedness activities to ensure immediate Ebola outbreak response capacity in Benin, Burkina Faso, Cameroon, the Central African Republic, Cote d'Ivoire, the Democratic Republic of the Congo, the Gambia, Ghana, Guinea-Bissau, Mali, Mauritania, Nigeria, Senegal and Togo.

Background

Senegal confirmed one case of EVD on 28 August 2014 in a Guinean man, 21 years old, who had travelled from Guinea to Dakar by taxi around 14 August and had developed symptoms on August

16. Between 18 and 25 August, he was seen as an outpatient at a health post; he was admitted to the Fann University Hospital on 26 August. He had not reported travelling from Guinea or contact with other EVD patients, and the health personnel in Senegal were informed of his potential contact only later, at which time he was isolated. He then tested positive for Ebola virus.

A total of 74 contacts (34 residents in the house in which the patient stayed and 40 health care workers) were identified and followed over the next 21 days. None of the contacts developed an EVD infection. The patient recovered and was discharged from hospital after twice testing negative for Ebola virus.

Actions taken by Senegal

Senegal began preparatory work to manage potential imported cases of EVD months before the case described above was detected. A dedicated inter-ministerial committee was established, which met regularly to ensure the interoperability of plans. Among many other activities, a national EVD response plan was drafted, with the necessary standard operating procedures for surveillance, isolation, infection prevention and control, transport of samples and burials. Community engagement was addressed early in the preparations. Key health care staff at regional and district levels were trained to ensure their capacity for detecting, notifying and implementing the appropriate public health measures after identification of a suspected EVD case.

When the case was detected, an emergency committee was established, composed of nine sub-committees covering the nine technical areas of response. These sub-committees, with the support of international partners, managed all aspects of the response, from case management to contact tracing and social intervention to provide for the family of the case. The capacity of the “numéro verte” (hotline) was strengthened to enhance community surveillance. Screening was introduced at the airport and port, while other border crossings with Guinea remain closed.

An important outcome of the response has been the establishment, by ministerial decree, of an emergency operations centre (EOC). The centre is not yet operational, but substantial progress has been made in defining its role and assessing the requirements for ensuring a functioning decision-making entity.

Objectives of the country visit

Senegal has already demonstrated its preparedness to respond to EVD cases, having detected and managed a case in August 2014. The objectives of the mission, therefore, were to build on existing systems to ensure that they can effectively and safely detect, investigate and report potential EVD cases and to further strengthen the preparedness measures already planned and implemented. During the visit, the next steps required to strengthen preparedness were identified for periods of 30, 60 and 90 days. These are listed in the EVD preparedness plan for Senegal.

The output of the mission is a costed 30-, 60- and 90-day national EVD operational plan, to be support by the country and the international community.

Team members

The joint team to strengthen Senegal's EVD preparedness was composed of representatives of Senegal's Ministry of Health, WHO, CDC, the United Nations Office for Coordination of Humanitarian Affairs, the European Centre for Disease Prevention and Control, the Erasmus Medical Centre, Netherlands, and John Hopkins University, USA (see Annex 1 for the team composition).

Team activities: day-by-day summary

Day 1		
Meeting with WHO Country Office staff and WHO Representative	WHO Country Office	Introduction of preparedness team members and review of mission objectives Finalization of agenda and method
Ministry of Health  	Ministry of Health	Meeting with the Minister of Health and Social Welfare, the Director-General of Health and the Head of the EOC to discuss the objectives of the mission and the expected outputs and to understand the expectations of the Minister. The team (WHO Representative, team leader, CDC and United Nations Office for Coordination of Humanitarian Affairs) gave a briefing on the mission objectives, programme of work and expected products. Discussions included the importance of establishing the EOC to manage all emergencies, the role of the IHR as a whole-of-government approach and not just a Ministry of Health instrument (for travel restrictions and measures), the need to strengthen the behavioural aspects of Ebola control, including anthropological and sociological support. The Minister noted that Senegal had opened its airport and sea borders; opening ground crossings would require effective strategies to control international spread of EVD. She asked the team to include a visit to the airport and the humanitarian corridor. She asked about WHO activities in Mali and the Gambia for ensuring containment in the former and preparedness in the latter. Senegal was looking beyond an operational plan to financing the plan, and she asked the mission to ensure that Senegal is provided with the financial and other resources necessary to make the country ready for any re-introduction of EVD. The Minister concluded that Senegal cannot be complacent, as there is always room for improvement, and the country must maintain the utmost vigilance, particularly since the neighbouring countries Guinea and Mali are currently affected by the EVD outbreak.
Meeting national and international partners	WHO Country Office	A meeting was held to which all national and international partners were invited. They were briefed on the objectives of the mission, the current epidemiology of the EVD outbreak in West Africa and the main tools for evaluation (preparedness checklist, simulation exercise and group work). Participants

		were divided into thematic groups for the remainder of the mission (the visit and subsequent working group). The Director for Prevention presented the major preparedness activities implemented in Senegal.
Day 2		
Field visit to the Joal health district   	Joal District Health Centre, District isolation room, Caritas health post and Joal fishing port	The team visited the District Health Centre in Joal and heard a presentation by the head physician, Dr Awa Bathily, on preparedness and response activities in the District. Joal is of particular relevance because it is the largest fishing port in Senegal, with regular arrival of boats from the affected countries. Many activities have been undertaking, including communication with schools, fishermen, religious leaders, community leaders and the general public. All health centres in the district are well equipped, and health care workers appear to be well trained and informed about the procedures for preparing and responding to EVD. The team then visited the dedicated isolation and transit facility in the Health Centre, to which all suspected cases in the district will be transferred. The isolation facility is equipped with two beds but lacks running water, dedicated toilets, areas for putting and taking off PPE and an incineration facility. The facility is thus currently not operational for isolating suspected cases. The team visited a health post run by the nongovernmental organization Caritas. The health post nurse described the procedures used and precautions taken during daily activities. The medical personnel appeared to be well informed and involved in EVD surveillance and was actively reaching out to West African expatriate and fishing communities. The facility had two PPE kits, but these were not of the right specifications. The team made a brief visit to the fishing port to assess the feasibility of a permanent, long-term system for entry screening. Temperature screening was conducted at the port during the *tabaski* festivity (Eid al-Adha) but has since been discontinued.
Field visit to the treatment centre in Fann Hospital	Fann Hospital	The team visited the treatment centre for suspected and confirmed EVD cases in Fann Hospital. The centre is part of the Infectious Diseases Centre, but in a separate building. The team was guided by a group of infectious disease specialists from the hospital and Médecins sans Frontières (MSF) staff who had helped to set up the centre in accordance with MSF guidelines and had trained the teams. The separate building is clearly marked as a secured area. There are four rooms for suspected cases and nine rooms for patients with confirmed EVD. The flow of health care

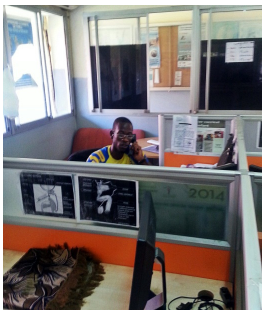
		workers and of suspected and confirmed cases is well defined and understood by the health staff (signs, maps and posters in place). Additional protocols are defined for suspected cases detected at entry to the hospital and in the consultation area. Laboratory confirmation is performed at the Institut Pasteur in Dakar. Sample transport by the emergency medical service, SAMU, is functional. The treatment centre is fully operational, and stocks (PPE, disinfectants, intravenous fluids etc.) are in place. The last suspected case was hospitalized the week before the visit. As Dakar has had one patient with confirmed EVD, the personnel have hands-on experience and have adopted protocols and standard operating procedures.
Field visit to the SAMU 	SAMU	The SAMU coordinates emergency and disaster care throughout the country, in collaboration with the national association of fire-fighters and all hospitals. SAMU is a national service but is used primarily in Dakar. Since the emergence of Ebola, SAMU has been responsible for collecting samples from suspected EVD cases or bodies, alerting the Institut Pasteur and transporting the samples to the laboratory for testing. SAMU is also responsible for alerting the Fann Hospital and transferring suspected cases to the isolation unit. Written standard operating procedures, two dedicated ambulances and 17 trained personnel are available for collecting and transporting samples and suspected cases. SAMU maintains a 24 h/24 h, 7 d/7 d call line, with four centres; all call centre staff (call attendant, doctor, fire-fighters) have been trained in case definition.
Visit to the National Service for Health Education and Information 	National Service for Health Education and Information	The communication group visited the National Service for Health Education and Information located in Grand Yoff, Dakar. This service of the Ministry of Health and Social Affairs provides communication services on various health subjects and a “numéro vert”, a toll-free number for the public to call on health-related subjects. The hotline is set up in four cubicles, in which trained educators respond to up to 10 000 calls per month. Before the appearance of EVD, most callers asked for information on family planning; with the advent of EVD, the number of calls increased by 35%, and operating hours were extended to 24 h/24 h, 7 d/7 d. Specific training on EVD and four more telephone lines would improve the service level, and specialized software would make it possible to record data from each call, providing real-time mapping of information requests and specific questions in the 14 regions of Senegal.
Day 3		

Table-top exercise 	Saly resort	The audience for the exercise was composed of representatives of the Ministry of Health, other components of the Senegalese administration (communication, police, environment), United Nations agencies (WHO, WHO Country Office, UNICEF, Office of Humanitarian Affairs and the International Organization for Migration), nongovernmental organizations and civil society. The WHO team presented the progressive scenario of suspected cases, to a small cluster of confirmed cases, to a large, multifocal EVD outbreak. The discussion among the 45–50 participants was constructive and highlighted immediate gaps. This exercise revealed areas for immediate, mid-term and long-term improvement. The next day, the gaps were discussed in depth by component in order to propose improvement to the preparedness plan, with clear actions, timelines and budgets.
Day 4		
Group work by theme 	Saly resort	*Morning session* Strengths and weaknesses associated with each task were identified, and actions were recommended to fill gaps. *Afternoon session* Each group identified operational objectives and activities for each objective. Tasks associated with each activity were linked with the responsible government agency for each task and the international agency that could provide support. *Evening session* The group met in plenary to hear the reports of group work, feedback and input. An action plan was formulated on the basis of the results of the group discussions.
Day 5		
Reporting of observations and recommendations of the mission 	Ministry of Health	The findings of the two days of group work were presented to the Ministry of Health. The Director-General of the Ministry, in response to the findings with regard to the EOC, noted that committees and inter-ministerial coordination were in place, which guaranteed an effective response throughout the various phases of a potential epidemic; the system was functioning well. The WHO Representative acknowledged the considerable work already done in Senegal. The international health community wished to ensure that country-level responses reflect evolving understanding of an effective response. It is important that Senegal respond to the evolving standards and best practices identified by the international health community.
Visit to the Léopold Sédar Senghor international airport	Léopold Sédar Senghor international airport	The team visited the Dakar international airport and met with the authorities responsible for civilian travel and for the “humanitarian corridor” that is being used to ship supplies and personnel to the affected countries.

Findings

The strengths and weaknesses identified in each thematic area during the on-site visits, the table-top exercise and group work are listed below.

Component	Strengths	Weaknesses
Component 1: **Coordination**	Existence of inter-ministerial coordination committees and various commissions Political will and certain funds available Experience in national coordination during the response to the confirmed case in Senegal Existence of command and control procedures Available expertise and technology EVD epidemic management committee has a clear mandate	Multiple decision-making centres No terms of reference or official administrative instruments Cumbersome decision-making procedures Insufficient resources to hire EOC personnel Organizational chart incorporating the EOC still not validated Delay in implementing coordination
Component 1: **Logistics**	Available logistical support facilities can be mobilized with support from other sectors Recognized experience and human resources available for stock management Already provided for and funded	Insufficient stockpiling capacity at the Ministry of Health itself
Component 2: **Rapid response team**	Existing organizational chart with provisional terms of reference Computer-assisted communication system Health workers trained by MSF Health workers and teams have experience in certain aspects of EVD (treatment, surveillance, laboratory, contact tracing)	Insufficient human resources to form a rapid response team Most of the trained health workers are in Dakar
Component 3: **Social mobilization**	Existence of denominational, socio-professional and development assistance networks (religious, traditional communicators, traditional healers, journalists, nongovernmental organizations, private companies etc.) Existence of a scenario-based communication plan, currently being consolidated Existence of a media and communications committee Existence of civil society and community organization networks Existence of agreements between the Ministry of Health and other sectors Existence of a platform for non-State actors Good collaboration between Ministry of Health and the media Existence of communication focal points in most ministries Existence of a Ministry of Health hotline Good compliance of the population with	Insufficient multiplier effect of action at operational level No specific tools for communication interventions Insufficient involvement of other stakeholders Some social mobilization committees not operational No formal procedures for checking messages and information products No communications guide with talking points for each stage of the response No partnership agreements with the media No rumour monitoring system

	messages, and regular dissemination of messages in the media and mobile telephone networks Existence of working groups (revision and consolidation of the strategy, development of a monitoring and evaluation mechanism, training plan) Availability of printed materials at all levels	
Component 4: **Infection prevention and control**	Health facilities for setting up isolation units being identified Existence of standard operating procedures for safe burials, and locations of secured burial sites agreed with the community Special transport procedure for burials established Existence of a committee for hospital-acquired infections at hospital level and committees for health and hygiene in the workplace	No routine distribution of posters on prevention and control of EVD Little general awareness of hygiene precautions or means of efficient infection prevention and control No remuneration or social benefits for health workers potentially exposed to Ebola virus (no compensation in the event of illness or death) No routine training or equipment for health workers and non-health personnel in the regions (outside Dakar) No standardized, nationwide triage procedure
Component 5: **Case management**	Existence of a 13-bed treatment centre in Dakar Triage protocol at the entrance to Fann Hospital Written protocols for case management and management of the treatment centre Mapping of transit and treatment centres in progress Management of an actual case has provided considerable experience	No treatment centres outside Dakar Very few operational ambulance teams to transport suspected EVD cases Shortage of equipment for burial teams
Component 6: **Epidemiological surveillance**	Tools available at all levels Training in surveillance already exists at national level Weekly epidemiological bulletin published and disseminated weekly	People in the regions call other emergency numbers for information about EVD. Health workers not familiar with case reporting forms Instructions not available in paper format Not all partners receive the weekly epidemiological bulletin
Component 7: **Contact tracing**	Tiered organization of regional and district health teams Existence and sharing of contact-tracing tools Some health workers in regions at greatest risk trained in use of the contact-tracing module Existence of contact monitoring teams at district level	Community health workers not involved in contact tracing No training for health workers in use of the contact-tracing module Insufficient logistical, financial and human resources No training for district or community

	Existence of a proactive community network Community intermediaries focused on EVD	health workers
Component 8: **Laboratory**	Transport and specimen shipment arrangements operational Presence of the Institut Pasteur (the WHO reference laboratory for EVD) in Dakar	Insufficient resources to transport specimens from the remotest regions
Component 9: **Capacity at points of entry**	Existence of multisectoral plans at Dakar port and airport Screening procedure on departure from Dakar airport Existence of a provisional protocol of an action plan for handling public health emergencies at points of entry Personnel from different sectors present at points of entry (administrative authorities, defence and security forces) Training in detection and immediate response at some points of entry Existence of equipment and isolation rooms at some points of entry Instructions on standard and additional precautions from the national programme to control hospital-related infections PPE available at most points of entry Existence of directives (FT2: Procedures to follow in the presence of a suspected case, FT5: Surveillance of EVD at borders, traveller identification form)	Inadequate facilities and infrastructure No isolation rooms in some areas or unsuitable or substandard equipment Limited human and logistical resources Lowered vigilance and lax procedures after successful treatment of case No electricity in some forward posts No information on EVD for ships' captains Sporadic enforcement of surveillance measures
Component 10: **Budget**	Existing budget	Emergency budget insufficient to meet the requirements of preparing for and responding to an EVD epidemic Budget not decentralized to peripheral level Fund-raising techniques poorly adapted to emergency scenarios

Humanitarian country team overview

The national authorities in Senegal plan for and respond to humanitarian emergencies through a country team led by a resident coordinator. The humanitarian country team comprises United Nations agencies, the Red Cross and six international nongovernmental organizations. The current response model has four strategic sectors: food security, health and nutrition, water and sanitation and other sectors.

The latest inter-agency humanitarian multi-hazard contingency plan for Senegal was approved in January 2012 for two scenarios: an internal conflict in Mali leading to an influx of refugees and relocation of humanitarian assistance to Senegal, and food insecurity due to a locust invasion or another natural disaster. The document has not been updated since 2012. The work plan for 2014

included an update of the contingency plan, but it is not clear whether this will be done, because of limited resources.

The World Food Programme updated its logistics capacity assessment in 2013. The information in this assessment will assist a future United Nations Mission for Emergency Ebola Response by identifying the logistics that would be required for rapid mobilization of resources.

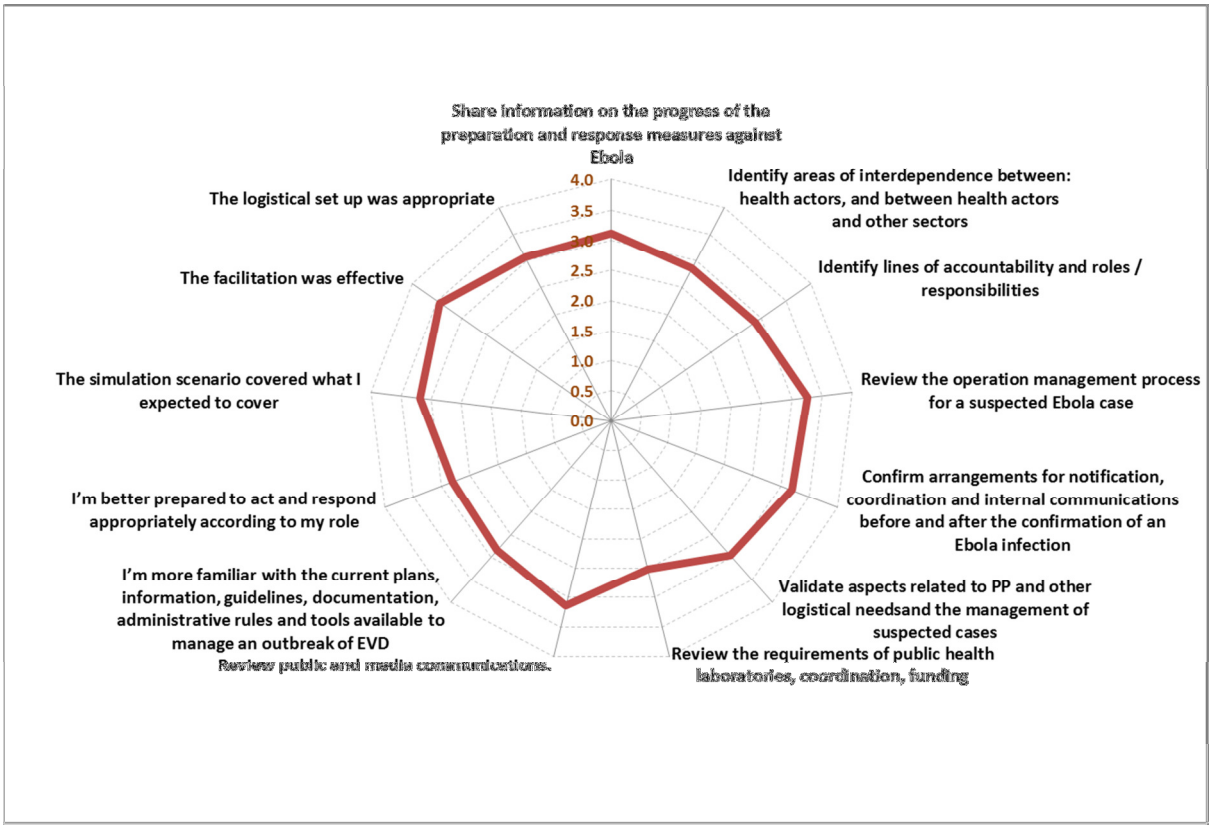
Senegal is unique in the region in having, in addition to the humanitarian country team, the regional headquarters for a number of humanitarian agencies. Dakar is thus a humanitarian hub for responding to regional emergencies throughout West Africa, including support to the on-going EVD response. Currently, there is only limited planning at regional level for how the offices of these agencies would maintain critical services during a severe EVD outbreak.

Results of the table-top exercise

The table-top exercise, with facilitated group discussions, revealed several gaps in preparedness:

- A plan for transit centres and the proposed EVD treatment centre should be consolidated and diffused, including how and which regions or districts they will serve and when they will be operational.
- Review and ensure efficient coordination and a central repository of information, plans, directives and protocols. Ensure that all personnel who are expected to implement directives are aware of them and trained in their use.
- Train more health care workers and other personnel who might come into contact with suspected cases in their work (police, firemen, etc.).
- Fill the gaps in information material for community members who would be directly or indirectly (contact or family member) affected by EVD, and enhance community engagement, including families of cases.

Participants were asked to evaluate the table-top exercise according to 13 criteria. The results are shown in the figure below. The mean value of the indicators was ranked between 1 (low quality) and 4 (high quality).



Priority activities

The following priorities were identified and ranked for implementation with 30, 60 and 90 days.

Component 1a: Coordination

- Clarify the roles and responsibilities of the EOC and other coordinating bodies, specifically the National Epidemic Management Committee, the Crisis Committee, the departments and services of the Ministry of Health and Social Welfare and other levels of the health pyramid (central, regional and district).
- Operationalize the EOC.
- Strengthen coordination of the management of events with public health implications.
- Update the response plan, and include epidemic scenarios.

Component 1b: Logistics

- Identify and quantify the logistical support facilities that can be mobilized at different ministries.
- Expedite implementation of a logistics plan.
- Prepare stockpiling sites at all levels (especially in regions and districts).

Component 2: Rapid response team

- Establish rapid response teams at central and regional levels through an official instrument.

- Map the resources necessary for the work of rapid response teams (human resources, logistics, etc.) in accordance with WHO standards.

Component 3: Social mobilization

- Finalize the national communication strategy and adapt it to all levels (region, district), including all media (private, community) and various scenarios for spread of the epidemic (see Annex 2).
- Enhance the equipment and human resources of the hotline, analyse calls to identify rumours, and include communication among the regions, the Regional Office for Education and Information on Public Health and the National Service for Health Education and Information.
- Increase the use of mobile telephones in public awareness-raising (SMS, voice mail).
- Extend to other sectors (education, family, youth, etc.), and operationalize social mobilization committees at all levels.
- Ensure the involvement of the major religious faiths, local elected representatives, nongovernmental organizations and private companies in EVD control.
- Establish a mechanism for validating messages and monitoring and evaluating them for dissemination by the media.

Component 4: Infection prevention and control

- Publish and distribute posters showing how to put on and remove PPE all at EVD treatment centres, the transit centre and health centres (district hospitals).
- Improve information at health centres on preventing the transmission of Ebola virus, rules for treating patients and generally applicable precautions, with priority for risk zones (regions bordering affected countries, Dakar port, airport and land borders and religious gatherings).
- Provide PPE suitable for use at all EVD transit and treatment centres.
- Consolidate and validate the composition of and supply of EVD hygiene kits to all transit and treatment centres.
- Improve the responsiveness of the hospital-acquired infections control committee in each region.
- Introduce a triage procedure in the event of an epidemic, with a triage control point at the entrance to the hospital. Staff must be trained to use appropriate equipment and comply with safe distances from suspected cases.
- Install hand-washing points at all transit and isolation centres and EVD treatment centres.
- Install functioning barrel incinerators at all transit and isolation centres and EVD treatment centres.
- Make arrangements to motivate workers exposed to high risks (transport and treatment of patients, burials), with compensation in case of infection or death.
- Strengthen the capacity of burial teams, including conducting at least one simulation exercise per EVD treatment centre.
- Update burial protocols and procedures, taking account of religious practices, in order to ensure that funerals respect customs.

Component 5: Case management

- Standardize the training of medical and non-medical personnel at transit and treatment centres throughout Senegal.
- Prepare directives and standards for the establishment and monitoring of treatment centres and a transit centre.
- Organize a practical simulation exercise in each region.

- Draw up a plan to increase the capacity of the Fann treatment centre if the number of confirmed cases of EVD increases.
- Train an ambulance team, and ensure that one ambulance is operational per treatment centre.
- Operationalize the EVD treatment centres in St Louis, Tambacounda, Kaolack, Kolda and Ziguinchor.
- Draw up a strategy for handling dead bodies that takes account of sociocultural aspects, in coordination with social mobilization committees.

Component 6: Epidemiological surveillance

- Sensitize the population to use a dedicated hotline number to alert the health authorities to suspected cases.
- Strengthen the alert management capacity of the National Service for Health Education and Information call centre (human resources, training, equipment, procedures, call analysis, database).
- Train and supervise health workers in using directives, resources, case reporting, identification and contact tracing.
- Assess the performance of the EVD surveillance system, including early detection, reporting, initial investigation and identification and contact tracing.
- Identify and train intermediaries in community-based surveillance.
- Strengthen capacity to manage a database combining epidemiological data, laboratory data and contact-tracing data.

Component 7: Contact tracing

- Train trainers in use of the contact-tracing module, including interpersonal communication and EVD awareness-raising.
- Train community workers in contact tracing, including interpersonal communication and EVD awareness-raising.
- Involve community health workers and Red Cross volunteers in contact tracing.
- Strengthen logistics to seek and monitor contacts.
- Share the list of required equipment and material with the United Nations Mission for Emergency Ebola Response.

Component 8: Laboratory

- Make arrangements for rapid transport of specimens from the remotest regions.
- Make arrangements for a regular supply of specimen-taking kits.
- Provide refresher training of staff in good specimen-taking practice and use of PPE.

Component 9: Capacity at points of entry

- Adapt the IHR plan of action at designated points of entry, and seek the necessary funding, equipment and human resources for its implementation.
- Apply surveillance directives at points of entry by ensuring routine completion of traveller identification forms.
- Maintain surveillance, vigilance and awareness-raising at points of entry.

Component 10: Budget

- Advocate for the renewal of emergency funds if necessary.

Conclusions and next steps

In conjunction with the Ministry of Health, WHO will facilitate implementation of the national EVD action plan, by:

- providing immediate and longer-term support for implementing the preparedness action plan covering 30-, 60- and 90-day goals through follow-up visits by technical experts;
- engaging extensively with the WHO and CDC country teams to support and monitor progress made in all technical fields;
- providing logistical, financial and human support for preparedness and response operations at national and sub-national levels;
- assisting in operationalization of the EOC by providing technical expertise in its creation, operation and management, with immediate deployment of an expert in the operation of an EOC and incident management systems; and
- in coordination with the resident coordinator and the humanitarian country team, ensuring a leading role for both technical and financial international partners in unified action to support Senegal in preparedness for and response to EVD.

Recommendations for consideration by the humanitarian country team:

While the objectives of the WHO preparedness strengthening team were primarily health-related, meetings were also held with agencies involved in non-health (multi-hazard) preparedness planning. In discussions with these humanitarian partners, a number of areas were identified that might improve existing preparedness.

- The humanitarian country team should consult with WHO to identify elements of the EVD preparedness action plan that they could implement in partnership with Senegal during the next 90 days.
- A rapid inter-agency exercise should be conducted to review lessons learnt about the response to the EVD case in Senegal in August 2014.
- An analysis should be made of the operational and business impact of a large-scale EVD outbreak on humanitarian agencies. This should cover both national and regional aspects, as Senegal serves as a humanitarian hub for other emergencies in the region.
- Review the existing humanitarian country team multi-hazard contingency plan, taking into account public health threats (such as EVD) and the issues identified during the exercise on lessons learnt.
- Consider increasing the scope of the logistics capacity assessment to include the regional nature of the EVD outbreak and its political aspects in relation to borders and the movement of people and supplies during an outbreak.

Annex 1. Team composition

WHO Country Office
Alimata Jeanne Diarra Nama, WHO Representative Senegal
Ibrahim Oumar
Malang Coly
Khalifa Mbengue
Oumar Sarre

WHO Regional Office for Africa
Ngoy Nsenga
Andre Rusanganwa

WHO Headquarters
Stella Chungong
Nicolas Isla

Erasmus Medical Centre, Netherlands
Carla van Tienen

European Centre for Disease Control
Bernard Sudre

US Centers for Disease Control and Prevention
Julie Thwing
Rene Arrazola
Panayotta Delinois
Aimee Summers

Johns Hopkins University
Gregory Piriot

Matraco Consultants
Frank Hilbrands

Annex 2. Preliminary results for the checklist

Component 1 – Overall coordination

	Tasks	Within *(days)*	Y/N
1.1	**High-level Emergency & epidemic committees / Ebola Task Force (ETF)** Implementation of a multisectoral and functional committee /Ebola Task Force (ETF) at the national and subnational / district levels	30	Y
1.2	Membership to the Committee / ETF at national and in "at risk" districts level reviewed and updated	30	N
1.3	Existence of clear TOR of Committee / ETF	30	Y
1.4	Mechanisms are in place for coordinating donor support at the country level	30	Y
1.5	Review of current policy and legislative frameworks to ensure that they will provide the authorization for the preparedness measures proposed	30	Y
1.6	Contingency or emergency plans exist are fully costed for fund identification	30	N
1.7	**Emergency Operations Centre (EOC) / Incident Management Structure (IMS)** Establish EOC/IMS personnel at the subnational / district level for localized EOC/IMS coordination and management	30	N
1.8	Identify, train and designate Incident Manager and Operations Manager who is empowered to take operational decisions	30	Y
1.9	Clearly assign communication responsibilities to specific EOC/IMS roles	30	Y
1.10	Develop plans for communication channels within EOC/IMS and between EOC/IMS, partners and the public	30	Y
1.11	Established procedures for command & control, coordination mechanisms, clearance of key technical and information	30	Y
1.12	Test coordination and operations through table top exercises and drills Identify a physical location for the EOC	30	N

Component 1b – Logistics support

	Tasks	Within *(days)*	Y/N
11.1	Define and implement logistical support for all components to provide all the facilities required in a given time and according to quality standards	30	Y
11.2	Identify needs and storage capacity required for all components, establish efficient inventory management system.	30	Y

11.3	Identify the input requirements, optimize the supply chain, define and implement standard operating procedures to reduce delivery times and improve the recovery process.	60	Y
11.4	Establish appropriate communication system to ensure smooth operations.	30	Y
11.5	Provide transportation for goods and people, taking into account the safety needs and prerequisites.	30	Y
11.6	Establish and ensure a safe, adequate system for transporting specimens at national and international level from the point of origin to the reference laboratory	30	Y
11.7	Ensure the correct installation of medical facilities and their operation according to infection control standards, provide an isolation area, a waste management system, supply of inputs, water supply and electricity, and support through adequate maintenance.	60	N
11.8	Identify, develop and make available the non-medical human resources required for the implementation of activities (drivers, burial team, security, administration, etc.)	60	Y

Component 2 – Rapid Response Team (RRT)

	Tasks	**Within *(days)***	**Y/N**
2.1	Identify and assign team leader(s) and multidisciplinary members under the framework of the EOC/IMS	30	Y
2.2	Ensure that there is a rapid communication system in place to alert the RRT	30	Y
2.3	Train all clinical staff on the RRT in case management using international standards and the use of a mock Ebola treatment centre	30	N
2.4	Train the RRTs on sampling procedures for suspected EVD cases and on the transport of category A pathogens	30	Y
2.5	Train the subnational RRT in surveillance and contact tracing	30	Y
2.6	Map potential health facilities at the district level that are ready to receive suspect EVD cases	60	N
2.7	In the absence of an EVD case in the country after 60 days, conduct at least one simulation exercise to maintain the capacity of the RRTs to respond quickly	90	N

Component 3 – Public awareness and community engagement

	Tasks	**Within *(days)***	**Y/N**
3.1	Develop or adapt, review, translate into local languages and disseminate targeted messages for media, health-care workers, local and traditional leaders, churches, schools, traditional healers and other community stakeholders.	30	Y
3.2	Identify and engage influential /key actors/mobilizers such as religious leaders, politicians, traditional healers, and media in urban and rural areas.	30	Y
3.3	Map out public communication capacities and expertise within health and other sectors	30	Y
3.4	Identify and establish mechanisms for engagement with national networks for social mobilization	30	Y
3.5	Identify established functional communication coordination mechanism involving	30	Y

	all government sectors and other stakeholders (including civil society organizations and communities)		
3.6	Establish coordination mechanism for engaging with the community (involving the traditional leaders, relevant sectors in a bottom-up approach)	30	Y
3.7	Establish coordination mechanism for engaging with partners (e.g. NGOs)	30	Y
3.8	Draw up a roster with clear roles and responsibilities for internal and external communications and spokespersons	30	Y
3.9	Establish functional and timely procedures for review, validation and clearance of information products	30	Y
3.10	Identify and train spokespersons and communication team and provide with talking points as needed	30	Y
3.11	Develop a comprehensive strategy, plan and budget for engaging with the media and public (including a scaled-up approach)	30	Y
3.12	Establish a system for rumour monitoring, investigation and response	30	Y
3.13	Establish a plan for reviewing, revising and monitoring impact of communication strategy	30	Y
3.14	Identify critical communication networks and plan for the use of materials in appropriate languages (TV, radio, social media, SMS, story tellers, theatre, and other appropriate communication means)	30	Y
3.15	Establish media monitoring mechanisms with appropriate tools	30	Y

Component 4 – Infection prevention and control

	Tasks	**Within *(days)***	**Y/N**
4.1	Provide health facilities with basic hygiene, sanitation, disinfection/protective equipment and posters. Priority should be given to hospitals; then health centres in high risk areas (started in 30 days and to cover priority districts in 60 days).	30-60	N
4.2	Increase the general awareness about hygiene and how to effectively implement infection prevention and control (started in 30 days and completed in 60 days for priority districts).	30-60	N
4.3	Identify health facilities for setting up basic isolation units (2 beds) for suspected cases in all major hospitals and all border points (ideally regional and district hospitals)	30	N
4.4	Equip and adequately train health-care workers including environmental health personnel, cleaners, etc. on IPC measures, including waste management, with priority for those in first contact with patients and at basic isolation units.	60	N
4.5	Establish a compensation and benefits package for health-care workers (HCWs) for: remuneration and motivation for high-risk assignment ; in case of infection and death.	60	N

Component 5 – Case management

5a) Ebola Treatment Centre (ETC)

	Tasks	Within *(days)*	Y/N
5a.1	Set up at least one facility with trained staff, adequate supplies, ready to provide care to a patient or cluster of patients with suspected EVD. This facility should cater for 15 patients initially.	30	Y
5a.2	Equip and adequately train ambulance teams to transport suspect EVD cases	30	N
5a.3	Identify health facilities at district level that can be turned into an ETC at short notice	30	Y
5a.4	Identify health facilities at local level that can be turned into an ETC at short notice	60	N

5b) Safe burials

	Tasks	Within *(days)*	Y/N
5b.1	Develop SOPs for safe burials and decontamination	30	Y
5b.2	Identify appropriate secured burial ground with agreement of the community	30	Y
5b.3	Equip and adequately train burial teams (8 people)	30	N
5b.4	Ensure that a dedicated transportation process is in place to bury human remains safely	30	Y
5b.5	Ensure burial teams have access to support services such as drivers, grave diggers, and potential security support during the burial process	30	N

Component 6 – Epidemiological surveillance

	Tasks	Within *(days)*	Y/N
6.1	Establish a 24/7 hotline with escalation facilities and medically trained staff	30	Y
6.2	Train the hotline staff on case identification and managment of communication with potential cases	30	Y
6.3	Provide guidance (case definition and investigation forms to all sub-national / district levels and health-care facilities), standard case definitions to all countries)	30	Y
6.7	Provide training on the case definition and investigation	30	Y
6.8	Test existing surveillance / IDSR systems for Ebola, identify gaps and start implementation of corrective actions where necessary.	30	N
6.6	Establish immediate lines of reporting for suspect cases, clear responsibility for such actions	30	Y
6.7	Identify human resources for community surveillance (community HCWs, Red Cross/Crescent volunteers, NGOs, healers, leaders, etc.)	30	Y
6.8	Disseminate simplified case definitions for community use	60	Y

Component 7 – Contact tracing

	Tasks	Within *(days)*	Y/N
7.1	Train the teams at both national and subnational / district levels including on contact tracing and data management (with a ToT strategy)	30	N
7.2	Provide UNMEER with a list of required equipment and materials for contact tracing at national and sub-national levels	30	N
7.3	Train staff at district level on contact tracing	30	N
7.4	Train staff at subdistrict and community levels on contact tracing	30	N

Component 8 – Laboratory

	Tasks	Within *(days)*	Y/N
8.1	For each district, identify laboratory responsible for analysis or specimen handling of biological samples and mode of transport for samples.	30	Y
8.2	Stand-by arrangements and agreements with WHO Collaborating Centres for confirmatory testing in place	30	Y
8.3	Stand-by arrangements and agreements with relevant airlines to ship samples from suspected cases to WHO Collaborating Centres in place	30	N
8.4	Availability of resources to facilitate transportation and shipment of specimens	30	Y
8.5	Existence of protocol for: – Sample collection; – Referral and shipment of specimens from suspect EVD cases to designated laboratory for confirmation at national and subnational public health laboratories	30	Y
8.6	Laboratory personnel trained on procedures for specimen collection, packaging, labelling, referral and shipment, including handling of infectious substances.	30	Y

Component 9 – Capacities at Points of Entry

	Tasks	Within *(days)*	Y/N
9.1	Ensure that a health emergency contingency plan is in place at high risk PoE (ports, airports and ground crossings)	30	Y
9.2	Deliver identified supplies (9 PPE full sets at each PoE Medical equipment to survey cases 3 infrared hand held thermometers, 1 scanner, 2 observation room/ 2 health facilities and supplies for safe isolation and observation of suspect cases if possible separation room, if not, a separated area. Depending on the geographical location, 1 ambulance) to PoEs. Every PoE needs to have either a separation room or a dedicated area for holding suspected cases.	30	N
9.3	Identify PoE teams to cover 24/7, to assist travellers and ensure correct isolation if required, including through a « holding » centre/area for any suspect cases.	30	N
9.4	Review and test current communication system between health authorities and conveyance operators at PoE, and national health surveillance system	30	N
9.5	Review systems and procedures for implementation of health measures related to IPC, and train related staff	30	N

9.6	Avail SoPs to identify, manage and refer suspected ill patients from PoE to designated hospital/isolation facility.	30	Y
9.7	Sensitize public health authorities at PoE to EVD, review their roles and processes for handling, reporting and for referral of suspected cases of EVD	30	Y
9.8	Avail SOP for implementing exit screening in the event of a confirmed EVD outbreak.	30	Y

Component 10 – Overall budget for outbreak

	Tasks	**Within *(days)***	**Y/N**
10.1	Define operational budget for activities (communication, enhanced surveillance, investigation, etc.), pre-epidemic detection and for the preliminary response	30	Y
10.2	Identify funding sources, including allocation of domestic resources and mechanisms to raise additional resources when necessary, has been put in place and is known	30	N
10.3	Develop templates for resource mobilization and for country and donor reporting, including mechanisms to monitor and track implementation	30	N
10.4	Establish easily accessible contingency funds for immediate response to outbreak of EVD at national and other appropriate sites	30	N
10.5	Identify the process to transfer money from central level to local emergency use	30	N

Annex 3. Additional observations on field visits

Field visit to the Joal health district

Joal District health centre		
Strengths	**Weaknesses**	**Recommendations**
Involved, trained medical administrators and personnel, including in the use of PPE, directives, hand-washing. Many activities conducted to sensitize communities, including information sessions with specific communities (Guinean and Malian communities, religious leaders, schools, community gatherings, fishing community), radio, posters and flyers. Thiès region well equipped with PPE Experience in health screening at the fishing port during the *tabaski* festivity (5 days) Roles of each component in the response fairly well established: Red Cross for contact tracing and burials security and defence for screening and movement of patients community for early warning fully equipped ambulances for transporting patients	Some misunderstanding about point-of-entry screening Reduced vigilance among health care workers and less coordination after treatment of the case in Senegal No running water in Joal District Little involvement or support from the Mayor of Joal Lack of funds and equipment Isolation unit not functional Gaps in training, and no follow-up Some stigmatization of the Guinean community	Conduct regular refresher training for all personnel engaged in preparedness and response activities for EVD, including health care workers, security and defence personnel, fire brigade, community intermediaries. Revise surveillance and case management directives from the Ministry of Health. Set up a sustainable system for screening at the fishing port.
Joal district isolation centre		
A building exists for isolating two patients. Processes for waste management have been considered but are not implemented. Material and equipment for decontamination are available. An informal system exists for identifying boats from affected countries.	Inconsistent running water No functioning toilets near the isolation room No division between the two beds in the isolation room No area for putting and taking off PPE No area for decontamination No functional incinerator No body bags available	Plan for rapid expansion, with tents for putting and taking off PPE. Provide a continuous supply of PPE and other essential material, including body bags. Install a functioning incinerator for safe disposal of biological waste.
Caritas health post		
Medical personnel appeared to be well informed and involved in EVD surveillance. Active contact with West African expatriate communities Health post equipped with two PPE kits PPE not re-used	No case definitions available at the health centre PPE kits are available but are not of the right standard (H5N1 kits from the US Agency for International Development)	Provide appropriate PPE to the health centre. Provide printed case definitions (epidemiological and community).

Joal fishing port		
Staff at the fishing port are willing to participate in surveillance The fishing community is involved and informed.	Very busy location, at which screening will be difficult	Raise awareness about EVD issues in the fishing community.

Field visit to the Fann treatment centre

Strengths	Weaknesses	Recommendations
The treatment centre is operational overall (treatment of confirmed cases and management of one suspected case per week). The centre was completed in collaboration with MSF. It includes clearly defined risk areas (perimeter fence, high- and low-risk areas) and signs for caregivers and patients. The centre is stocked; stock tracking is operational; and there are water and electricity supplies. A possible extension to increase capacity is planned. A team of medical and nonmedical workers has been trained to operate the centre. The ambulance disinfection area is clearly defined. There is a screening process with a triage point at the entrance of the hospital. Staff have been trained in use of appropriate equipment and compliance with safe distances from suspected cases. Nearby laboratory (Institut Pasteur of Dakar) and transport of specimens are operational. Operational discharge protocol and solidarity kit with recommendations for safe sexual relationship after discharge of confirmed cases	No simulation of deaths at the centre for testing procedures (disinfection, visit by a family member, transport or burial) No dedicated team for handling deaths No working environment without risk for falling or injury (outside the treatment centre) Cramped lavatory; hospital furniture that is difficult to disinfect	Review the triage protocol and flow to the entrance of the centre (waiting area before triage, exit route of suspected cases confirmed as negative). Discuss the possibility of creating separate areas for suspected and confirmed cases (separate area with a chlorine foot bath). Simulate a death to test handling procedures (disinfection of the body at the burial centre) for all personnel. Use a colour code to demarcate high-risk area (warning tape, stickers) and ensure visible separation between the different zones; add an extra barrier between the morgue area and the perimeter of the treatment centre, and close the space in the wall at the back of the incineration area. Stockpile sufficient equipment in areas for suspected and confirmed cases, and provide emergency stock in case of supply disruption. Set aside a room in the high-risk area for disinfection of equipment and, if possible, an opening for waste products to be passed the incinerator area. Remove objects that could breach PPE (furniture, walls), and ensure a proper working environment (remove rubbish from the ground outside, protect electric cables, replace the lids of the septic tanks, and ensure adequate lighting at night). Consider installing commodes in all rooms, especially if toilets are difficult to decontaminate. Establish an information transfer protocol for clinical monitoring of patients in the high-risk area. Routinely investigate unexplained

		hospital deaths (specimen collection with PPE). Keep an incident register (e.g. errors in infection control measures), and make provision for corrective measures.

Visit to the humanitarian corridor

A humanitarian corridor was instituted when commercial airlines stopped flying to and from countries affected by EVD. It is located opposite the international airport and consists of temporary tents are used, although a hard structure is being built. It is managed by the army and operated by officials of the United Nations Humanitarian Air Service and the World Food Programme using their own aircraft. It includes sections for police and customs in order to reproduce an airport set-up. Chlorinated water and soap are available, and all passengers are obliged to wash their hands on arrival. Uniforms are reported to be PPE but are in fact locally manufactured from white fabric; they are available when required. Medical personnel wear masks, gloves and bonnets while on duty. The planes were initially used to transport freight and passengers, but now transport only passengers. There are three flights per week; as the times of the flights are known in advance, only a minimum number of staff are on site outside the aircraft arrival and departure period. Passengers are screened with a thermoflash thermometer and complete a form. Passengers who present no anomalies continue their journey on normal international flights or remain in Senegal, in which case their names, addresses and contact information are given to SOS Médecins. Their temperature is monitored for 21 days and reported to the authorities. Suspected cases (on arrival and departure) are detained in a separate tent, the Ministry of Health focal point physician is alerted, an ambulance is called to deal with the patient, and the disinfection team takes action.

Strengths	Weaknesses	Recommendations
No contact policy Patient flow is clear (even though we did not see the relevant documentation) The area is properly guarded.	Insufficient training, no simulation exercises Adjacent neighbourhoods have not been informed about the activities of the corridor Personnel do not know whether to use PPE or whether a uniform is required. The alcohol hand-rub provided is past its use-by date. Lack of or no information on EVD provided to nonmedical staff (such as guards)	Organize a table-top simulation exercise. Strengthen awareness-raising activities in communities affected by the corridor and auxiliary personnel. Draw up a protocol for surveillance of humanitarian personnel using the corridor.

Field visit to Léopold Sédar Senghor international airport (Dakar)

- About 6000 people pass through the airport each day (3000 departures and 3000 arrivals).
- The airport has a team of 60 medical staff (physicians, nurses, midwives, hygienists), working round the clock to monitor arriving and departing passengers.

Departure

- A thermal camera is installed at the main entrance of the airport to detect fever. (It does not cover all the doors.)
- A second check is performed on all passengers at the security gate with a thermoflash thermometer.
- There is an examination room to triage all people with fever, where they fill out a health form.
- Suspected cases remain in the examination room, and the emergency services are contacted to take them to the treatment centre if necessary.

Arrival

- Passengers from countries affected by EVD are asked to fill out a health form.
- A thermal camera at the principal entry point is used to detect people with fever (which covers all doors); because of renovation work, thermoflash equipment is used to check all passengers on arrival.
- Suspected cases are taken in the airport ambulance to the examination room (barely ready, just renovated), either directly from the aircraft or if they present with a temperature on arrival.
- The screening unit comprises a waiting room, two examination rooms, a room for health workers to put on PPE (the flow is clearly indicated) and a storage area (PPE, chlorine tablets and spraying equipment).

Suspected cases remain in the examination room, and the emergency services are contacted to take them to the treatment centre if necessary.

Strengths	Weaknesses	Recommendations
Dedicated teams trained in screening at airport entry and exit points Separate building for examination of suspected cases directly after leaving an aircraft Robot being acquired to disinfect aircraft Posters in the airport inform people about Ebola virus and the importance of hand hygiene. Study to evaluate use of health forms, thermoflash thermometers and thermal cameras is planned.	Additional training and simulation exercises needed (including how to put on and take off PPE) More stock required, including disinfection equipment No posters on use of PPE in the separate examination building Management of EVD-related waste must be reviewed, because disposal bags are currently closed by hand; their transport to another location should be eliminated if possible. Secondary international airports (Ziguinchor, Cap Skiring, Tambacounda) must urgently be equipped and staffed with dedicated EVD screening personnel and adequate stocks.	Provide additional training in screening, especially at secondary airports. Strengthen awareness-raising activities on EVD at Léopold Sédar Senghor international airport. Provide the necessary equipment to ensure the detection, isolation and treatment of suspected cases. Organize a table-top simulation at the airport.